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(54) METHOD FOR MANUFACTURING RESIN-COATED METALLIC SHEET

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a method for manufacturing a resin-coated metallic sheet which shows economy and excellent can-making properties and hardly deteriorates impact resistance when heated for the baking of the outer face to be performed for the purpose of beautifying the metal sheet after can-making and is best-suited for a metal can subjected to hot water sterilization.
SOLUTION: This method for manufacturing the resin-coated metallic sheet comprises the step to cool and harden a molten resin film obtained in such a state that an olefin polymer is confluent at both ends of a T-die and cut/ remove both the ends to obtain a resin film (A) and a resin film (B) and the step to laminate the resin film (A) and the resin film (B) on a heated metallic sheet.

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CLAIMS

[Claim(s)]
[Claim 1] In the manufacture approach which covers the resin film (B) with which covers the resin film (A) with which the melting point makes a subject crystalline polyester 180 degrees C or more at one side of a metal plate, and the melting point becomes another field from crystalline polyester 180 degrees C or more Cutting clearance of the both ends is carried out for the melting resin film obtained after the olefin system polymer had joined both ends using the T die after cooling solidification. It is the manufacture approach of resin cladding which consists of the approach of laminating in the metal plate which had the approach, resin film (A), and resin film (B) which obtain the resin film (A) and the resin film (B) heated. And the resin film (A) is the compound configuration of the (I) layer / (II) layer / (I) layer. (I) Polyethylene terephthalate and polybutylene phthalate consist [a layer] of 60:40 - 30:70 % of the weight. (II) The polyester and the olefin system polymer which crystalline polyester and a polyester elastomer become [a layer] from 95:5 - 70:30 % of the weight consist of 70:30 - 100:0 % of the weight. The manufacture approach of resin cladding that the resin film (B) is characterized by being what polyethylene terephthalate and polybutylene terephthalate become from 60:40 - 30:70% of the weight of polyester.
[Claim 2] The manufacture approach of the resin cladding indicated by claim 1 characterized by for the hard segment of a polyester elastomer being polyester which uses terephthalic-acid residue, ethylene glycol residue, and/or butanediol residue as a principal component, and a soft segment being polytetramethylene oxide.
[Claim 3] The manufacture approach of the resin cladding indicated by claim 1 characterized by the olefin system polymer of the both ends of the resin film (A) and the (II) layer and the olefin system polymer of the both ends of the resin film (B) being the same.
[Claim 4] The manufacture approach of the resin cladding indicated by claim 1 characterized by the blend ratio of the (I) layer of the resin film (A), the polyethylene terephthalate of the polyester of the resin film (B), and polybutylene terephthalate being the same.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the manufacture approach of resin cladding. Furthermore, it is related with the manufacture approach of the suitable resin cladding for the metal can with which it excels in canning nature (for example, drawing and ironing nature) and shock resistance, and warm water sterilization processing is carried out by the detail.
[0002]
[Description of the Prior Art] Conventionally, the can inner surface and can outside surface of a metal can applied the thing which made the solvent dissolve or distribute various thermosetting resin, such as an epoxy system and a phenol system, for the purpose of corrosion prevention, and covering a surface of metal has been performed widely. However, by the coat approach of this thermosetting resin, in order for desiccation of a coating to take long duration, productivity fell, and there was a fault of generating problems which are not desirable, such as environmental pollution by a lot of organic solvents, in many cases.
[0003] In order to solve this fault, the approach of covering thermoplastics with a melting extrusion method to a metal plate is indicated (for example, reference 1 reference.). Moreover, once carrying out cooling solidification of the thermoplastics which carried out melting extrusion, the approach of sticking to the heated metal plate by pressure is indicated (for example, reference 2 reference.). Moreover, the approach of sticking to the metal plate which had the non-oriented film of the polyethylene terephthalate produced with the melting extrusion method and/or polybutylene terephthalate heated by pressure is indicated (for example, reference 3 reference.). However, it was not the approach by which width reduction (the neck in is called) of the melting resin film is large, and needs to produce a film by width large several 10cm to resin width required for a coat, and it is satisfied with the coat approach of these thermoplastics of reduction from the point of profitability in case melting resin is extruded in the shape of a layer from a T die.
[0004] In order to solve this fault, the approach of making the neck in small is indicated by using the polyester which comes to blend the polyester to which copolymerization of the polybasic acid or the polyhydric-alcohol component of three or more organic functions was carried out (for example, reference 4, 5 reference.). However, it is easy to heat-deteriorate at a melting process with the polyester from an extruder to [process / these coat approaches] a T die to which copolymerization of the polybasic acid or the polyhydric-alcohol component of three or more organic functions was carried out. In order that it might be easy to generate a foreign matter (for example, foreign matter which used the gel foreign matter or the degradation object as the nucleus) on the melting resin film obtained even if it used the thermostabilizer together and the crack on the basis of a foreign matter might go into a resin enveloping layer at the time of canning, it was not what is satisfied as resin cladding for canning.
[0005] Moreover, by the resin for a coat of resin cladding used for drawing and a cover-printing can, it is required the outstanding moldability which can follow canning (drawing and ironing) is not only required, but that shock resistance should not fall in heating of the outside baking finish carried out for the purpose of beautiful-izing after canning. However, the aforementioned resin

cladding was not what shock resistance falls in many cases and satisfies a shock-proof demand.
[0006]
[Patent reference 1] JP,57-203545,A [the patent reference 2] JP,10-309775,A [the patent reference 3] JP,2001-1447,A [the patent reference 4] JP,10-86308,A [the patent reference 5] JP,2000-71388,A [0007]
[Problem(s) to be Solved by the Invention] This invention aims at canceling the trouble of said conventional technique. That is, the neck in at the time of melting extrusion is small, and since it is hard to generate a foreign matter on the obtained melting resin film, the manufacture approach of the suitable resin cladding for the metal can with which shock resistance cannot fall easily in heating of the outside baking finish which is excellent in profitability and canning nature, and is carried out for the purpose of beautiful-izing after canning, and warm water sterilization processing is carried out is offered.
[0008]
[Means for Solving the Problem] In the manufacture approach which covers the resin film (B) which the object of this invention covers the resin film (A) which makes crystalline polyester a subject at one side of a metal plate, and becomes another field from crystalline polyester Cutting clearance of the both ends is carried out for the melting resin film obtained after the olefin system polymer had joined both ends using the T die after cooling solidification. It is the manufacture approach of resin cladding which consists of the approach of laminating in the metal plate which had the approach, resin film (A), and resin film (B) which obtain the resin film (A) and the resin film (B) heated. And the resin film (A) is the compound configuration of the (I) layer / (II) layer / (I) layer. (I) Polyethylene terephthalate and polybutylene phthalate consist [a layer] of 60:40 - 30:70 % of the weight. (II) The polyester and the olefin system polymer which crystalline polyester and a polyester elastomer become [a layer] from 95:5 - 70:30 % of the weight consist of 70:30 - 100:0 % of the weight. The resin film (B) is attained by the manufacture approach of the resin cladding characterized by polyethylene terephthalate and polybutylene terephthalate being what consists of 60:40 - 30:70% of the weight of polyester.
[0009]
[Embodiment of the Invention] By the (I) layer of the resin film (A) and resin film (B) which are kicked to this invention, glycol components other than dicarboxylic acid components other than a terephthalic acid, ethylene glycol, and butanediol can be used in the range which does not spoil the property of polyethylene terephthalate and polybutylene terephthalate. For example, alicycle group dicarboxylic acid, such as hydroxy acid, such as aliphatic series dicarboxylic acid, such as aromatic series dicarboxylic acid, such as isophthalic acid, an orthochromatic phthalic acid, naphthalene dicarboxylic acid, diphenylsulfone dicarboxylic acid, and 5-sodium sulfoisophtharate, oxalic acid, a succinic acid, an adipic acid, a sebacic acid, Deccan dicarboxylic acid, a maleic acid, a fumaric acid, and dimer acid, and a p-oxy-benzoic acid, and cyclohexane dicarboxylic acid, can be used as dicarboxylic acid. Moreover, aromatic series glycols, such as alicycle group glycols, such as aliphatic series glycols, such as a propanediol, pentanediol, hexandiol, and neopentyl glycol, and cyclohexane dimethanol, bisphenol A, and Bisphenol S, can be used as glycol components other than ethylene glycol and butanediol.
[0010] The crystalline polyester which constitutes the (II) layer of the resin film (A) in this invention It is the polymer which consists of a dicarboxylic acid component and a glycol component. As dicarboxylic acid Aromatic series dicarboxylic acid, such as a terephthalic acid, isophthalic acid, an orthochromatic phthalic acid, naphthalene dicarboxylic acid, diphenylsulfone dicarboxylic acid, and 5-sodium sulfoisophtharate, Alicycle group dicarboxylic acid, such as hydroxy acid, such as aliphatic series dicarboxylic acid, such as oxalic acid, a succinic acid, an adipic acid, a sebacic acid, Deccan dicarboxylic acid, a maleic acid, a fumaric acid, and dimer acid, and a p-oxy-benzoic acid, and cyclohexane dicarboxylic acid, can be used. Moreover, aromatic series glycols, such as alicycle group glycols, such as aliphatic series glycols, such as ethylene glycol, a propanediol, butanediol, pentanediol, hexandiol, and neopentyl glycol, and cyclohexane dimethanol, bisphenol A, and Bisphenol S, can be used as a glycol component.
[0011] 95:5 - 70:30 % of the weight is required for the ratio of the crystalline polyester of the (II) layer of the resin film (A), and a polyester elastomer in this invention. Shock resistance is not

low desirable when a polyester elastomer is less than 5 % of the weight. On the contrary, when exceeding 30 % of the weight, the regurgitation from a T die becomes unstable and is not desirable.

[0012] A hard segment is polyester which uses terephthalic-acid residue, ethylene glycol residue, or butanediol residue as a principal component, and a polyester elastomer may contain aliphatic series dicarboxylic acid, such as aromatic series dicarboxylic acid, such as isophthalic acid and an orthochromatic phthalic acid, an adipic acid, a sebacic acid, and Deccan dicarboxylic acid. moreover, a soft segment — the polytetramethylene oxide of weight average molecular weight 400-5000 — 5-50-mol % — containing is desirable.

[0013] The lubricant which consists of an antioxidant, a thermostabilizer, an ultraviolet ray absorbent, a plasticizer, a pigment, an antistatic agent, lubricant, a crystalline-nucleus agent, inorganic, or an organic particle if needed may be combined with the polyester in this invention.

[0014] It does not limit especially about the manufacture approach of the polyester in this invention. That is, it can be used even if manufactured by which approach of an ester interchange method or a direct polymerization method. Moreover, in order to raise molecular weight, it may be manufactured by the solid-state-polymerization method. It is desirable to use polyester with the oligomer content lower than the point which lessens the amount of oligomer from the polyester resin in the Pasto rise processing, retorting, etc. which are furthermore carried out after filling up a can with contents manufactured by the reduced pressure solid-state-polymerization method.

[0015] It is desirable that the (I) layer of the resin film (A) and the blend ratio of the polyethylene terephthalate and polybutylene terephthalate of the polyester of the resin film (B) are the same. The reason is because the quality of the resin film covered by the metal plate is stabilized, when the reuse of the resin including the both ends which carried out cutting clearance and obtained the resin extruded in the shape of a layer after cooling solidification from a viewpoint which excludes the futility of resin is carried out in the (II) layer of the resin film (A).

[0016] It does not limit especially about the manufacture approach of the polyester elastomer in this invention. That is, it can be used even if manufactured by which approach of an ester interchange method or a direct polymerization method. The melting point of the polyester used by this invention needs to be 180 degrees C or more from canning nature (it sets to drawing and ironing and is galling control [the crack of the lengthwise direction in a resin coat] with the resin by the side of a can inner surface at reservation of the mold-release characteristic of punch, and the resin by the side of a can outside surface).

[0017] Especially the olefin system polymer blended with polyester in the (II) layer of the resin film (A) is not limited. Low density polyethylene, medium density polyethylene, high density polyethylene, straight chain-like low density polyethylene, ultra high molecular weight polyethylene, polypropylene, ethylene propylene rubber, an ethylene butene copolymer, an ethylene vinyl acetate copolymer, an ethylene ethyl acrylate copolymer, an ethylene-vinylalcohol copolymer, an ionomer, etc. can be used.

[0018] The same thing of the olefin system polymer used at the both ends of the olefin system polymer used in the both ends of the resin film (A) of the shape of a layer extruded from the T die and the (II) layer and the resin film (B) is desirable. The reason is because the quality of the resin film covered by the metal plate is stabilized, when the reuse of the resin including the both ends which carried out cutting clearance and obtained the resin extruded in the shape of a layer after cooling solidification from a viewpoint which excludes the futility of resin is carried out in the (II) layer of the resin film (A).

[0019] Although especially a reuse ratio is not limited in this invention when carrying out the reuse of the resin including both ends in the (II) layer of the resin film (A), 5 - 90 % of the weight is desirable.

[0020] In this invention, in case polyester and an olefin system polymer are extruded in the shape of a layer from a T die, it is required for both ends (one side is a part 5cm or less) to use an olefin system polymer.

[0021] In this invention, after carrying out melting of dryblend or the obtained polymer which carried out melting mixing for polyester and an olefin system polymer within one well-known

shaft or a biaxial extruder, the layer-like melting resin film is obtained using well-known multi-manifold dice, such as an edge lamination type.
[0022] In this invention, the well-known method of contacting the resin fused in the shape of a layer from the T die can be used for the rotated cooling roller as the cooling solidification approach. In case melting resin is contacted to a cooling roller, it is desirable to adopt the approach of sticking with the approach or static electricity which sprays Ayr compulsorily. Moreover, the method of making the both ends and center section of stratified resin become independent, and carrying them out also in any of a compulsive Ayr blasting method and electrostatic contact printing, is more desirable.
[0023] Once rolling round the resin film which carried out cutting clearance and obtained both ends the approach of laminating directly in the metal plate which had the resin film which carried out cutting clearance and obtained both ends after carrying out cooling solidification in this invention heated, or after carrying out cooling solidification, all of the approach of laminating to the metal plate heated at another process can use it.
[0024] In the latter coat approach, it is desirable to carry out a vertical drawing (for it to extend 2.0 to 6.0 times at more than the glass transition point of polyester and the temperature of under cold crystallization temperature), and to heat-treat a cooling solidification object under stress further (for example, 50 degrees C or more and temperature with a melting point [of polyester] of -20 degrees C for 1 - 20 seconds). In case that reason covers this resin film roll to a hot-metal plate after keeping the rolled-round resin film roll, it is because it is desirable although Siwa resulting from the contraction with the passage of time at the time of fracture of the resin film by unwinding tension and storage of a resin film roll, blocking, etc. are controlled.
[0025] In this invention, the aluminum plate or aluminum alloy plate which performed a surface treated steel sheet, an aluminum plate, an aluminum alloy plate, or surface treatment, such as TIN fleece Tyr, can be used as a metal plate. the lamination roll after heating these metal plates to the melting point of -20 degrees C or more and the melting point of +150 degrees C of polyester -- using it -- the resin film (A) and the resin film (B) -- a metal plate -- water cooling a simultaneous lamination or after laminating serially and heating this lamination metal plate succeedingly with the melting point of +10 degrees C or more and the melting point of +60 degrees C of polyester -- and/or, air cooling is carried out and resin cladding is obtained.
[0026] Although especially the resin film thickness on a metal plate is not limited in this invention, 10-50 micrometers is desirable from the point of covering effect (rust-proofing nature), shock resistance, and profitability.
[0027]
[Example] Hereafter, this invention is explained based on an example.
[The assessment approach]
[0028] (1) After carrying out heating fusion of the melting point polyester constituent of polyester for 5 minutes at 300 degrees C, top-most-vertices temperature of the endoergic peak accompanying the fusion when measuring generation of heat and an endoergic curve (DSC curve) with 10-degree-C programming rate for /using a differential scanning calorimeter (DSC) was made into the melting point Tm (degree C) among the nitrogen air current using sample 10mg quenched and obtained with liquid nitrogen.
[0029] (2) The amount of necks in (cm) was calculated by the degree type using the average (Acm) of the delivery width (60cm) of the amount T die of necks in, and resin **** after the cooling solidification measured by n= 3 (resin **** before carrying out cutting clearance of the both ends). The amount of necks in estimated 5cm or less as those with practicability. (Amount cm) of necks in =60-A [0030] (3) After laminating the resin film (B) simultaneously in another [the resin film (A) and] field on one side of the aluminum alloy plate (thickness: 0.26mm 3004 system alloy plate) heated at the 250 degrees C of the production approaches of resin cladding, and heating at 275 degrees C, water quenching was carried out and the lamination aluminum plate was produced.
[0031] (4) Canning of the mold-release characteristic lamination aluminum plate of can inner surface resin and processing punch was carried out by n= 10, and visual observation of buckling extent which happens to the shaping can upper part was carried out. The valuation basis was set

up as follows and estimated O as those with practicability.
O about [of the buckling non-generated **:can opening periphery of :can opening] — one third — 1/3 or more [of a buckling generating x:can opening periphery] — buckling generating [0032] (5) Resistance to scuffing of a can outside surface (crack of the lengthwise direction in can outside surface resin)
Visual observation of crack generating extent of the can drum wall section outside surface resin which carried out canning of the lamination aluminum plate, and fabricated it by n= 10 was carried out. The valuation basis was set up as follows and estimated O as those with practicability.
O :crack non-generated **: — about [of an outside surface] — one third — crack generating x: — outside crack generating [0033] intense to 1/3 or more (6) Start the sample of 7cm angle from the drum wall center section of the can which carried out after [40 second heating] water quenching of the can which carried out canning of the shock-proof aluminum lamination plate, and obtained it at 280 degrees C. The weight (600g) of 10mm of diameters of a head is dropped to the field equivalent to the can outside surface of this sample from height of 10cm, and an impact is given. Subsequently, the sample was placed on the glassware which filled 7% of dilute hydrochloric acid (placing in the condition that the heights of a sample are immersed), and visual observation of the corrosion condition of heights was carried out three days after. The valuation basis was set up as follows and estimated O as those with practicability.
O : — corrosion non-generated x: of heights — corrosion generating [0034] of heights (7) Let what carried out water quenching be a sample after heating the can which carried out canning of the milkiness extent aluminum lamination plate of the can outside surface after warm water processing, and obtained it for 40 seconds at 270 degrees C. Visual observation of the can outside surface which carried out water quenching of this sample, and obtained it after being immersed for 10 minutes into 80-degree C warm water was carried out. A valuation basis is set up as follows. It carried out and O was estimated as those with practicability.
O : — **: in which milkiness is not conspicuous — [0035] whose color of an aluminum alloy plate is not visible with x:milkiness which can be seen although it has milked clearly [The code and content] of the polyester used for the example and the example of a comparison, and the olefin system polymer
(1) PET:polyethylene terephthalate (2) PBT:polybutylene terephthalate (3) PET-I : polyethylene terephthalate isophthalate (ten mol % of repeat units of ECHIRE isophthalate)
(4) Elastomer : the copolymer of polybutylene terephthalate and polybutylene oxide (weight average molecular weight is 15 mol % of repeat units of the butylene oxide of 1000)
(5) CO-PET:copolymerized polyester (6) olefin of a terephthalic acid, and ethylene glycol/cyclohexane dimethanol (mol % 70/30) : TAFUMA A-4085 (the Mitsui Chemicals, Inc. make, trade name)
[0036] As a (I) layer raw material of the [example 1] resin film (A), PET/PBT=40 / 60% of the weight of polyester, (II) Melting of (I) layer raw material / elastomer =85 / the 15 % of the weight is carried out at 280 degrees C as a layer raw material. Melting of the olefin simple substance is carried out at 250 degrees C as a raw material of the both ends of the resin film (A). an edge lamination type T die (delivery width =2cm/56cm/of the delivery width / olefin of the delivery width / center section of an olefin — 2cm) Heating is used for 260 degrees C and it is the cast (the distance of 15cm from a T die to the grounding point of the melting resin in a cooling roller) to a cooling roller (a part for peripheral-speed/of 20m) in the shape of a layer. After a center section and both ends carried out spraying of Ayr compulsorily with separate equipment, cutting clearance was carried out, both ends (5cm of one side) were rolled round, and the thickness used for the resin film (A) obtained the resin film of the shape of a 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll.
[0037] Moreover, melting of PET/PBT=40 / 60% of the weight of the polyester is carried out at 280 degrees C as a raw material of the center section of the resin film (B). Melting of the olefin simple substance is carried out at 250 degrees C as a raw material of the both ends of the resin film (B). an edge lamination type T die (delivery width =2cm/56cm/of the delivery width / olefin of the delivery width / center section of an olefin — 2cm) Heating is used for 260 degrees C and

it is the cast (distance from a T die to the grounding point of the melting resin in a cooling roller 15cm) in the shape of a layer to a cooling roller (a part for peripheral-speed 20m/). After a center section and both ends carried out spraying of Ayr compulsorily with separate equipment, they carried out cutting clearance, rolled round both ends (5cm of one side), and obtained the resin film of the shape of a roll whose thickness used for the resin film (B) is 16 micrometers.
[0038] After having stuck the resin film (A) to one side of the 3004 system aluminum alloy plate (thickness 0.26mm) heated at 250 degrees C by pressure, sticking the resin film (B) to another field by pressure and heating at 275 degrees C, water quenching was carried out and the lamination aluminum plate was obtained.
[0039] In this way, after applying the lubricant for shaping to the obtained lamination aluminum plate, spinning was carried out, as it heated and the resin film (A) became the can inner surface side at 70 degrees C of board temperature. Subsequently, temperature of the obtained cup was made into 40 degrees C, ironing was carried out with the die temperature of 80 degrees C, and the seamless can of 350ml size was obtained.
[0040] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. It can be said that the amount of necks in is the manufacture approach of the resin cladding which was small excellent in profitability, and the approach of this example is the manufacture approach of resin cladding that the metal can in which was excellent in canning nature and outside warm water-proof milkiness nature and shock resistance were excellent is obtained.
[0041] The roll-like resin film whose thickness which the thickness used for the resin film (A) like an example 1 uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained except having made (II) layer raw material of the [example 2] resin film A into PET-I/elastomer =85 / 15 % of the weight.
[0042] Subsequently, canning of the lamination aluminum plate was produced and carried out like the example 1, and the seamless can of 350ml size was obtained.
[0043] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. It can be said that the amount of necks in is the manufacture approach of the resin cladding which was small excellent in profitability, and the approach of this example is the manufacture approach of resin cladding that the metal can in which was excellent in canning nature and outside warm water-proof milkiness nature and shock resistance were excellent is obtained.
[0044] (II) layer raw material of the [example 3] resin film A is made to be the same as that of an example 1 except having made (I) layer raw material / elastomer =85 / 15% of the weight of polyester into 87 % of the weight and 13 % of the weight of olefins. The roll-like resin film whose thickness which the thickness used for the resin film (A) uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained.
[0045] Subsequently, canning of the lamination aluminum plate was produced and carried out like the example 1, and the seamless can of 350ml size was obtained.
[0046] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. It can be said that the amount of necks in is the manufacture approach of the resin cladding which was small excellent in profitability, and the approach of this example is the manufacture approach of resin cladding that the metal can in which was excellent in canning nature and outside warm water-proof milkiness nature and shock resistance were excellent is obtained.
[0047] The both ends which carried out cutting clearance of the (II) layer raw material of the

[example 4] resin film A before (I) layer raw material / elastomer =85 / 15% of the weight of polyester obtained the resin film (A) in 50 % of the weight and the example 1 are corned. Except that the obtained polymer considered as 50 % of the weight, the roll-like resin film whose thickness which the thickness used for the resin film (A) like an example 1 uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained.
[0048] Subsequently, canning of the lamination aluminum plate was produced and carried out like the example 1, and the seamless can of 350ml size was obtained.
[0049] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. It can be said that the amount of necks in is the manufacture approach of the resin cladding which was small excellent in profitability, and the approach of this example is the manufacture approach of resin cladding that the metal can in which was excellent in canning nature and outside warm water-proof milkiness nature and shock resistance were excellent is obtained.
[0050] The both ends which carried out cutting clearance of the (II) layer raw material of the [example 5] resin film A before (I) layer raw material / elastomer =85 / 15% of the weight of polyester obtained the resin film (B) in 50 % of the weight and the example 1 are corned. The roll-like resin film whose thickness which the thickness used for the resin film (A) like an example 1 uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained except having made the obtained polymer into 50 % of the weight. Subsequently, canning of the lamination aluminum plate was produced and carried out like the example 1, and the seamless can of 350ml size was obtained.
[0051] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. It can be said that the amount of necks in is the manufacture approach of the resin cladding which was small excellent in profitability, and the approach of this example is the manufacture approach of resin cladding that the metal can in which was excellent in canning nature and outside warm water-proof milkiness nature and shock resistance were excellent is obtained.
[0052] Although it was going to obtain the roll-like resin film like the example 1 except having make the raw material of the both ends of the [example of comparison 1] resin film (A), and the resin film (B) into PET/PBT=40 / 60 % of the weight, the amount of necks in was large, and if 18cm cutting clearance of the both ends was not carried out, since the center section where thickness distribution is uniform was not obtained, it was the resin film manufacture approach inferior to profitability.
[0053] Although it was going to produce the film like the example 1 except having considered as PET/PBT=20 / 80% of the weight of polyester as a raw material of the (I) layer of the [example of comparison 2] resin film (A), and having been referred to as PET/PBT=20/80 as a raw material of the center section of the resin film (B) In order for the resin film to break between a cooling roller and a winding roll in many cases and not to stabilize and obtain the roll-like resin film, it is not desirable as the resin film manufacture approach.
[0054] It considers as PET/PBT=70 / 30% of the weight of polyester as a raw material of the (I) layer of the [example of comparison 3] resin film (A). It is made to be the same as that of an example 1 except having been referred to as PET/PBT=70/30 as a raw material of the center section of the resin film (B). The roll-like resin film whose thickness which the thickness used for the resin film (A) uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained.
[0055] Subsequently, canning of the lamination aluminum plate was produced and carried out like the example 1, and the seamless can of 350ml size was obtained.
[0056] The melting point of polyester, the amount of necks in at the time of the cast, canning

nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. Although the amount of necks in was the manufacture approach of the resin cladding which was small excellent in profitability and it was the manufacture approach of resin cladding excellent in canning nature and shock resistance, since this approach is inferior in outside warm water-proof milkiness nature, it is not desirable as the manufacture approach of resin cladding.

[0057] As a raw material of the (I) layer of the [example of comparison 4] resin film (A), and the (II) layer PET-I / elastomer = It is made to be the same as that of an example 1 except having ****ed to Polyeser A 85/15% of the weight. The roll-like resin film whose thickness which the thickness used for the resin film (A) uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained.

[0058] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. Although the amount of necks in was the manufacture approach of the resin cladding which was small excellent in profitability, since can inner surface resin and processing punch stick and a buckling occurs over the perimeter, this approach is not desirable as the manufacture approach of resin cladding.

[0059] The roll-like resin film whose thickness which the thickness used for the resin film (A) like an example 1 uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained except having considered as CO-PET as the (II) layer of the [example of comparison 5] resin film (A), and a raw material of the resin film (B).

[0060] Subsequently, canning of the lamination aluminum plate was produced and carried out like the example 1, and the seamless can of 350ml size was obtained.

[0061] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. Although the amount of necks in was the manufacture approach of the resin cladding which was small excellent in profitability and this approach was the manufacture approach of resin cladding excellent in outside warm water-proof milkiness nature, since canning nature and shock resistance are inferior in it, it is not desirable as the manufacture approach of resin cladding.

[0062] It is made to be the same as that of an example 1 except having considered as (I) layer raw material / elastomer =85 / 50 % of the weight of 15% of the weight of polyester, and 50 % of the weight of olefins as a raw material of the (II) layer of the [example of comparison 6] resin film (A). The roll-like resin film whose thickness which the thickness used for the resin film (A) uses for the 25 micrometers (6 micrometers of (I) bed depths, 13 micrometers of (II) bed depths) roll-like resin film and the resin film (B) is 16 micrometers was obtained. The roll-like resin film was obtained.

[0063] The melting point of polyester, the amount of necks in at the time of the cast, canning nature (crack generating extent of the can inner surface resin film, the mold-release characteristic of punch, and the can outside surface resin film), milkiness extent of the can outside surface after warm water processing, and shock resistance are shown in a table 1. Although the amount of necks in was the resin film manufacture approach of having excelled in profitability small, since this approach is a little inferior in the canning nature of the obtained resin cladding, it is not desirable as the manufacture approach of resin cladding.

[0064]

[A table 1]

	融点（℃） 上段：樹脂膜（A）の（I）層 中段：樹脂膜（A）の（II）層 下段：樹脂膜（B）	ネックイン量（cm）	加工ポンチの離型性	外面樹脂のキズ発生程度	耐衝撃性	温水処理後の外面樹脂白化程度
実施例1	251／222 239 251／222	3	○	○	○	○
実施例2	251／222 217 251／222	5	○	○	○	○
実施例3	251／222 239 251／222	3	○	○	○	○
実施例4	251／222 237 251／222	4	○	○	○	○
実施例5	251／222 241 251／222	5	○	○	○	○
比較例1	251／222 239 251／222	13	未測定	未測定	未測定	未測定
比較例2	246／223 239 246／223	3	未測定	未測定	未測定	未測定
比較例3	245 239 245	3	○	○	○	×
比較例4	217 217 251／222	3	×	○	○	○
比較例5	251／222 非晶性で融解ピークなし 非晶性で融解ピークなし	3	○	×	×	○
比較例6	251／222 239 251／222	2	△	○	○	○

注）比較例2では冷却ロールと巻取ロール間で樹脂膜が割れることが多く、ロール状の樹脂膜を安定して得られなかった。

[0065]
[Effect of the Invention] Since the manufacture approach of the resin cladding of this invention can exclude the futility of a raw material, it is the manufacture approach by which the resin cladding which it is not only the manufacture approach excellent in profitability, but was excellent in canning nature (they are the can inner surface resin film, the mold-release characteristic of processing punch, and the sex with a crack-proof of the can outside surface resin film especially) is obtained. Furthermore, it is hard to generate the poor appearance (milkiness of the resin film) of a metal-can outside surface in the warm water sterilization processing carried out after being filled up with contents, and even if it carries out heating supposing the outside baking finish carried out for the purpose of beautiful-izing after canning, it can be called the manufacture approach of very useful resin cladding that shock resistance cannot fall easily.

[Translation done.]